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Research paper

The effect of São Paulo's smoke-free legislation on carbon monoxide concentration in hospitality venues and their workers

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Abstract

Background Studies have shown that there is no safe level of secondhand smoke (SHS) exposure and there is a close link between SHS and the risk of coronary heart disease and stroke. Carbon monoxide (CO) is one of the most important components present in SHS.

Objective To evaluate the impact of the smoking ban law in the city of Sao Paulo, Brazil, on the CO concentration in restaurants, bars, night clubs and similar venues and in their workers.

Methods In the present study we measured CO concentration in 585 hospitality venues. CO concentration was measured in different environments (indoor, semi-open and open areas) from visited venues, as well as, in the exhaled air from approximately 627 workers of such venues. Measurements were performed twice, before and 12 weeks after the law implementation. In addition, the quality of the air in the city during the same period of our study was verified.

Results The CO concentration pre-ban and pot-ban in hospitality venues was indoor area 4.57 (3.70) ppm vs 1.35 (1.66) ppm ($p<0.0001$); semi-open 3.79 (2.49) ppm vs 1.16 (1.14) ppm ($p<0.0001$); open area 3.31(2.2) ppm vs 1.31 (1.39) ppm ($p<0.0001$); smoking employees 15.78 (9.76) ppm vs 11.50 (7.53) ppm ($p<0.0001$) and non-smoking employees 6.88 (5.32) ppm vs 3.50 (2.21) ppm ($p<0.0001$). The average CO concentration measured in the city was lower than 1 ppm during both pre-ban and post-ban periods.

Conclusion São Paulo's smoking-free legislation reduced significantly the CO concentration in hospitality venues and in their workers, whether they smoke or not.